### Seminar 1-2

### Critical Thinking: an introduction

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### 1. What is Critical Thinking?



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Critical thinking is the ability to think clearly and rationally about what to do or what to believe. Fundamentally, critical thinking is about using your ability to reason





It's about being active in your learning. It means that when you approach an idea, you do so with scepticism and doubt, rather than with unquestioning acceptance



You're questioning whether the ideas, arguments and findings you're coming across are the whole picture and you're open to finding that they're not.

You're identifying, analysing and, where possible, solving problems systematically





Critical Thinking
therefore encompasses
-at least- six vital life
skills: problem solving,
analysis, creative
thinking, interpretation,
evaluation, and
reasoning



## 2. Characteristics of Critical Thinkers

- (i). They are honest with themselves
- (ii). They resist manipulation
- (iii). They overcome confusion
- (iv). They ask questions and challenge ideas
- (v). They base judgements on evidence



(vi). They look for connections between subjects

(vii). They are intellectually independent (viii). They are inquisitive and look for gaps (ix). They are able to spot potential biases, distorted views, prejudices, and self-interest – in the work of others as well as in their own thinking

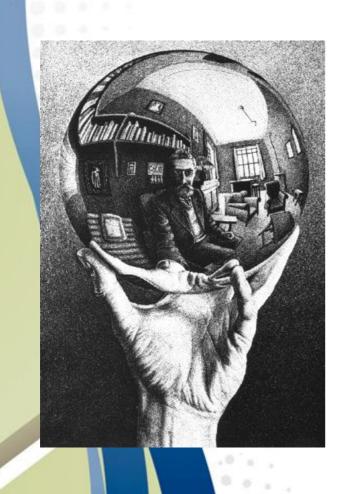


# It's cool to be a critical thinker!





## 3. How do we improve our critical skills?



Critical thinking is

a metacognitive skill. What
this means is that it is a higherlevel cognitive skill that involves
thinking about thinking.

In studying critical thinking we have to be aware of the good principles of reason reflective about or

reasoning

In addition, we often need to make a conscious effort to improve ourselves, avoid biases, and maintain objectivity. This is notoriously hard to do

We are all able to think but to think well often requires a long period of training. The mastery of critical thinking is similar to the mastery of many other skills





There are three crucial components to critical thinking.



**Theory**: we need to follow the correct rules of reasoning. Knowledge of theory includes knowledge of these rules. These are the basic principles of critical thinking, such as the laws of logic, and the methods of scientific reasoning

Also, it is crucial to know something about what not to do if we want to reason correctly. This means we should have some basic knowledge of the mistakes that people make. This requires some knowledge of typical logical fallacies.

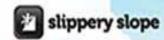




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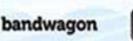
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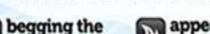


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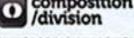
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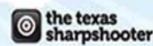
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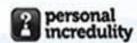
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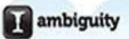
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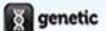
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Practice: However, merely knowing the principles that distinguish good and bad reasoning is not enough. We might study in the classroom about how to swim, and learn about the basic theory, such as the fact that one should not breathe under water. But unless we can apply such theoretical knowledge through constant practice, we might not actually be able to swim.

Similarly, to be good at critical thinking skills it is necessary to internalize the theoretical principles so that we can actually apply them in daily life. There is a way to do so. Lots of good-quality exercises (tutorials but also debates with other people in our

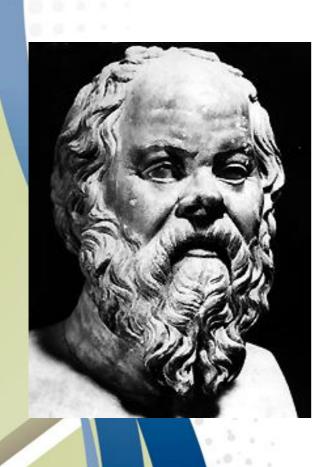
Attitude: Good critical thinking skills require not just knowledge and practice. Persistent practice can bring about improvements only if one has the right kind of motivation and attitude. The following attitudes are not uncommon, but they are obstacles to critical thinking:

(i).I prefer being given the correct answers rather than figuring them out

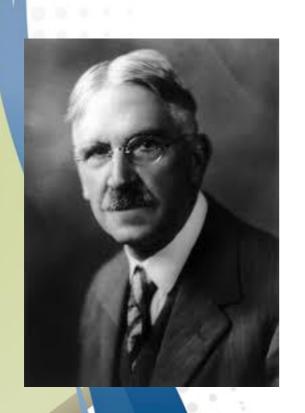
myself (ii).I don't like to think a le decisions as I rely only or

(iii) I don't usually review the mistakes

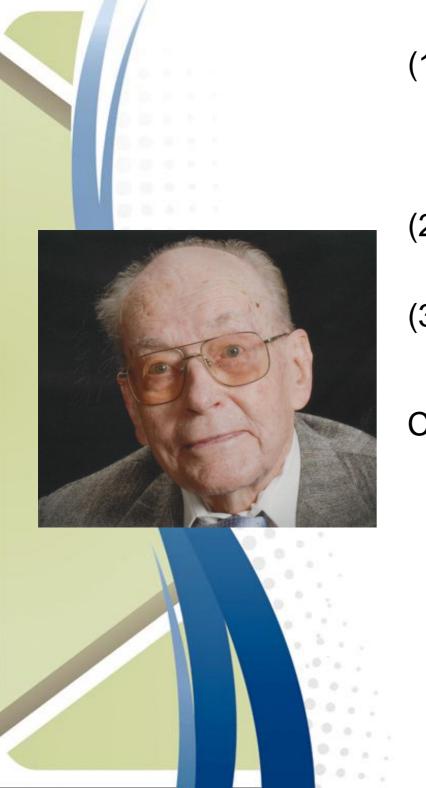
# 4. Defining Critical Thinking: a historical overview



People have been thinking about critical thinking and researching how to teach it for a hundred years. In a way Socrates began this approach to learning over 2000 years ago, but in modern time John Dewey is widely regarded as being the father of the modern critical thinking tradition



'Active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conclusions to which it tends, constitutes reflective thought' (Dewey 1909, p.9)



- an attitude of being disposed to consider in a thoughtful way the problems and subjects that come within the range of one's experience;
- (2) knowledge of the methods of logical enquiry and reasoning; and
- (3) some skill in applying those methods

Critical thinking calls for a persistent effort to examine any belief or supposed form of knowledge in the light of the evidence that supports it and the further conclusions to which it tends. (Glaser, 1941, p. 5)



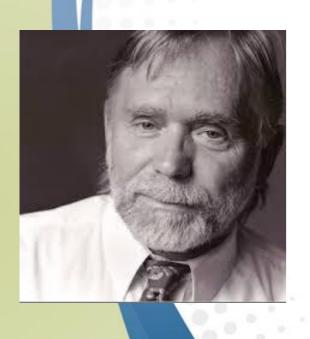


One of the most famous contributors to the development of the critical thinking tradition is Robert Ennis is:

Critical thinking is reasonable, reflective thinking that is focused on *deciding* what to believe or do. (Cf. Norris and Ennis, 1989)

Notice also that Ennis speaks of 'deciding what to . . . do', which was not explicitly mentioned earlier; so decision-making is paramount in Ennis's conception





Richard Paul gave a definition of critical thinking which looks rather different from the other definitions we analysed earlier. It is:

Critical thinking is that mode of thinking – about any subject, content or problem – in which the *thinker improves* the quality of his or her thinking by skilfully taking charge of the *structures inherent in thinking* and imposing intellectual standards upon them. (Paul, Fisher and Nosich, 1993, p. 4)

Crucial idea: metacognition'



Critical thinking is skilled and active interpretation and evaluations of observations and communications, information, and argumentation (Fisher and Scriven 1997, p.21)

Crucial idea: critical thinking requires certain standards - of clarity, relevance etc, and one might be more or less skilled at this.

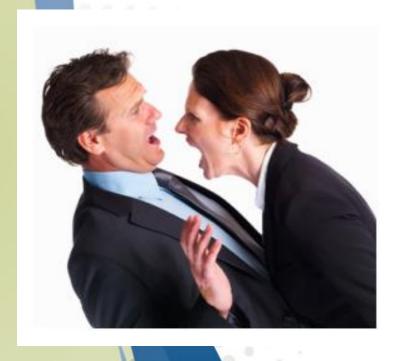


### Basic Skills to Critical Thinking

(a) to recognise problems, (b) to find workable means for meeting those problems, (c) to gather and marshal pertinent information,(d) to recognise unstated assumptions and values, (e) to comprehend and use language with accuracy, clarity and discrimination, (f) to interpret data, (g) to appraise evidence and evaluate statements

(h) to recognise the existence of logical relationships between propositions, (i) to draw warranted conclusions and generalisations,(j) to put to test the generalisations and conclusions at which one arrives, (k) to reconstruct one's patterns of beliefs on the basis of wider experience, and (I) to render accurate judgements about specific things and q everyday life. (Glaser

# 5. What do we mean by being critical?



Being 'critical' does not mean just being negative – of course- or point out what is wrong about something.

At masters level, being 'critical' means: 'fully informed, capable of supporting in-depth analysis and assessment'



# 6. Why is being critical important?

It affects your academic success

It affects your employability

Most importantly, it affects your daily life and gives you freedom of judgement over a wide range of topics.



### An example...

Iraq War – both Blair and Bush lacked "critical thinking." (let s put it gently) ...

The United States and Britain failed to examine the sources of their primary intelligence. In the buildup to the war, Saddam Hussein was cooperating with U.N. inspections, and in February 2003 had provided the names of hundreds of scientists to interview, individuals Saddam claimed had been involved in destruction of banned weapor inspections been allowed to continue

# 7. How do we become critical?

Open University (2009) outlined a stairway to help students understand the skills in thinking critically

Use critical thinking to develop arguments, draw conclusions, make inferences and identify implications.							Justify	
٨	Transfer the understanding you have gained from your critical evaluation and use in response to questions, assignments and projects.  Apply							
-	Assess the worth of an idea in terms of its relevance to your needs, the evidence on which it is based and how it relates to other pertinent ideas.							
1	are construc	Bring together different sources to serve an argument or idea you are constructing. Make logical connections between the different sources that help you shape and support your ideas.						
				Compare	Explore the similarities and differences between the ideas you are reading about.			
			Analyse	Examine how these key components fit together and relate to each other.				
	START HERE	Understand	Comprehend the key points, assumptions, arguments and evidence presented.					
	Process	Take in information ie. What you have read, heard, seen or done						



## 8. Teaching Critical Thinking



In a survey conducted by the UCLA Higher **Education Research** Institute, 99.6% of university teachers agreed that critical thinking is a "very important" or "essential" goal for undergraduate education.

(HERI (2009) *The* 

American College

Teacher: National Norms

But how should critical thinking be taught? There are lots of different issues to be investigated, such as:

Should critical thinking be taught as a separate subject on its own, or should it be taught in combination with other specific subjects that the students are studying?

Which are the topics that are most crucial? How useful are lessons in formal logic or Venn diagrams? How should we go about designing a curriculum?



#### Useful Teaching Tips



Tim van Gelder's 'Teaching Critical Thinking: Lessons from Cognitive Science'

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1. Don't look for "magic bullets". Your students will not become Einstein overnight; and no fancy new technology or teaching technique is going to produce dramatic transformations.

Don't be discouraged by slow progress. For your students, critical thinking is more of a life-time journey than something picked up in a two-week module.

Further Reading

Kuhn, D. (1991). The Skills of Ar Cambridge: Cambridge Unive



#### 2. Make sure your students practice critical thinking.

They have to actually engage in critical thinking itself, not just learn about it or observe others do it. And make sure at least some of your students' practice is on special activities specifically designed to help improve their critical thinking skills.

**Further Reading** 

Ericsson, K. A., & Charness, N. (1994). Expert performance. American Psychologist, 49, 725-747.



3. Students must practice transfer. Have your students practice carrying a particular general critical thinking procedure over into many different domains and contexts.

For example, a vital critical thinking skill is anticipating objections to your position on an issue. Have students consider their positions on a range of different issues, and on each topic, identify objections. Then have them identify objections to their position a range of different situation when writing an essay, when

4. Look explicitly at theoretical aspects of critical thinking. The important thing is that students understand the theory, can pick up the relevant vocabulary, and can see how the theory relates to what they are doing in other contexts.

For example, spend a class on the distinction between evidential reasons (reasons providing evidence that a claim is true) and explanatory reasons (reasons which assume the claim is true, and go on to explain how or why the situation came about).



### **Further Reading**

Anderson, J. R., Reder, L. M., & Simon, H. A. (1996). Situated learning and education. Educational Researcher, 25(4), 5-11.

There are also many good textbooks containing lots of useful theory.

Salmon, M. (2001). Introduction to Logic and Critical Thinking (4th ed.): Wadsworth;

Halpern, D. F. (2002). Thought and

5.Encourage students to counter belief preservation by actively exploring the evidence going against their beliefs.

Have them play "Devil's Advocate," arguing the case against their own side. Have them participate in structured debates, in which they are either arguing the case against what they antecedently believe, or at least must anticipate and respond to that case when made by the other side.

Further reading

# **6.Have your students regularly draw diagrams** of their reasoning.

For example, if they are doing an argumentative essay, require them to attach to their essay a diagram showing the logical structure of their argument. This will force them to clarify what their argument is, and give you a "road map" to their thinking.

### Further reading

Kirschner, P. J., Buckingham Shum, S. J., & Carr, C. S. (Eds.). (2002). Visualizing Argumentation: Software Tools for Collaborative and Educational Sense-Making. London: Springer-Verlag.



7. Decouple critical thinking from extrinsic rewards. In a school or university context, it is impossible to do this entirely. However, you can try to set up critical thinking activities students can enjoy for their own sake, challenges they can test themselves against, and standards they can aspire to meet.

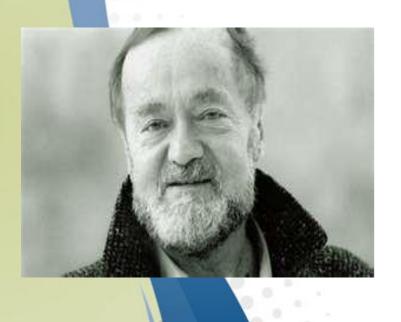
Take computer games as a model. Good computer games are successful largely because they set challenges user, offering no reward other satisfaction of better performance.

## 9. Toulmin's Model

Named after the famous British philosopher, it provides an organizational structure for constructing critical an persuasive arguments, specifically for situations where there are no clear-cut right answers.

This method involves six basic components that weigh and support the pros and considered to an argument. By apmodel, an argument is more recedible, less susceptible to rebuttals, and

## Six basic components



- 1.Claim: the position or claim being argued for; the conclusion of the argument.
- 2.Evidence: reasons or supporting evidence that bolster the claim.
- 3. Warrant: the principle, provision or chain of reasoning that connects the grounds to the claim.



- 4.Backing: support, justification, reasons to back up the warrant.
- 5.Objections/Rebuttals: exceptions to the claim; description and rebuttal of counter-examples and counter-arguments.
- 6.Qualifier: specification of limits to claim, warrant and backing. The degree of conditionality asserted

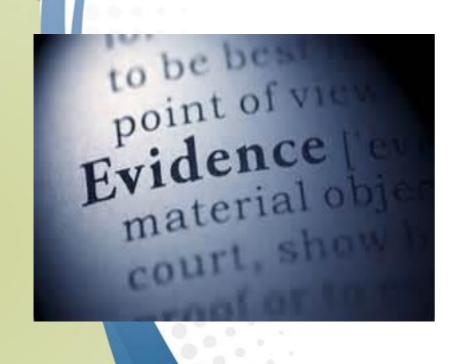


## The first triad...

A claim is the point an arguer is trying to make or the assertion one wishes to prove. In other words, the claim is the proposition an arguer wants someone else to accept. Simply put, ask yourself, "What is my main point?" There are three types of claims:

- 1. Fact Based Claim: Claim that focuses on empirically verifiable phenomena (through direct observation, experimentation, or other data-supported research).
- 2. Judgement and Value Claim: Claim involving opinions, attitudes, and subjective evaluations.
- 3. Policy Based Claim: Claim advocating courses of action that should be taken.





The evidence provides support and rationale for the claim. Ask yourself, "What is my proof?"

Evidence may consist of, but is not limited to, statistics, quotations, reports, findings, physical evidence, or other forms of data or reasoning



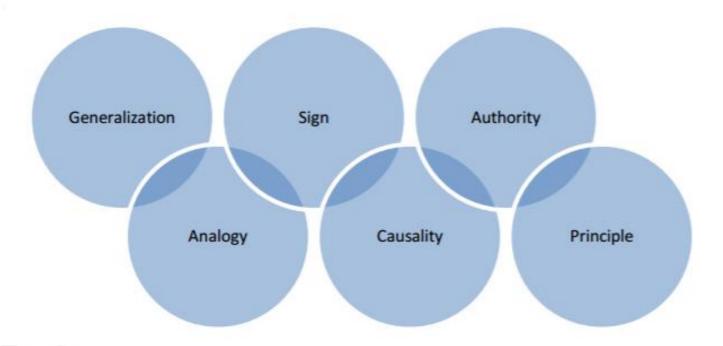
The warrant serves as an underlying connection between the claim and evidence.

That is, it suggests why the evidence supports the claim.

Thus, a warrant is the chain of reasoning that connects the evidential support and rationale to the claim.



There are six main strategies via which the relationship between evidence and claim are often established



These argumentative strategies are used at various levels of generality within an argument. Typically, they are interconnected and work in combination.

### The second triad...

Backing is evidence supporting a warrant. It is similar to evidence supporting a claim: It can include statistics, quotations, reports, findings, physical evidence, or other data or reasoning.

However, there is a big difference: evidence supporting a claim is a necessary component of a logical argument; but while backing can strengthen an argument, it is not a necessary component of it.



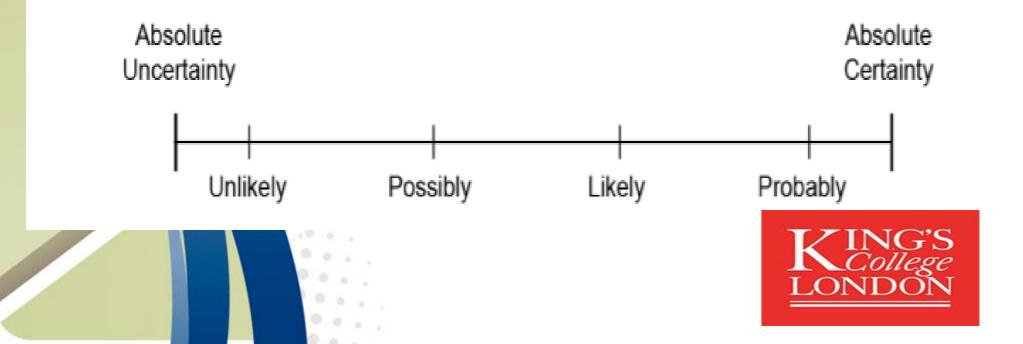
The counterargument raises potential objections to the claim and the rebuttal mitigates these objections by suggesting reasons the counterargument is flawed or otherwise weakening its significance.

Dealing with counterarguments and objections is thus a key part of the process of building arguments, refining them, interpreting and analyzing them



A qualifier limits the strength an arguer attributes to a claim. Qualifiers are usually associated with concerns about the soundness of evidence or the existence of valid counterarguments.

Collectively, they convey how confident the arguer is in the claim often by stating or implying the likelihood



# 10. Other Perspectives on Critical Thinking

Argumentation is key to critical thinking

Arguing, as opposed to simply disagreeing, is the process of intellectual engagement with an issue and an opponent with the intention of developing a position justified by rational analysis and inference



Arguments have premises, those things that we take to be true for the purposes of the argument, and conclusions or end points that are arrived at by inferring from the premises.

Understanding this structure allows us to analyse the strength of an argument by assessing the likelihood that the premises are true or by examining how the conclusion follows from them.

Arguments in which the conclusion

Logic: Logic is fundamental to rationality. It is difficult to see how you could value critical thinking without also embracing logic.

People generally speak of formal logic – basically the logic of deduction – and informal logic – also called induction.



Deduction is most of what goes on in mathematics and induction is usually about generalising or analogising and is integral to the processes of science.

Learning about this cognitive landscape is central to the development of effective thinking



### **Nature of Science and Statistics**

Learning about what the differences are between hypotheses, theories and laws, for example, can help people understand why science has credibility without having to teach them what a molecule is, or about Newton's laws of motion.

Understanding some basic also goes a long way to restudents feel more empowered to

# Teachers must have a critical spirit!

This does not mean moaning endlessly about education policies you dislike or telling students what they should think. It means first and foremost that you are capable of engaging in deep conversation.

This means debate and discussion based on considerable knows something that is almost each absent in the educational world.

Why, for a number of reasons...mostly, because they think that being critical is just a skill. But the Australian philosopher John Passmore criticised this idea nearly half a century ago:

If being critical consisted simply in the application of a skill then it could in principle be taught by teachers who never engaged in it except as a game or defensive device, somewhat as a crack rifle shot who happened to be might nevertheless be able to shooting to soldiers. But in fact being

# 11. Other Methods to Assess Critical Thinking

The Watson-Glaser Critical Thinking Appraisal (WGCTA) - The standard version consists of multiple choice questions for an hour-long test. It measures:

**Drawing inferences:** The ability to evaluate the validity of inferences drawn from a series of factual statements.

**Recognising assumptions:** The ability to identify unstated assumptions or presuppositions in a series of assertive statements

Argument evalutation: The ability to determine whether certain conclusions necessarily follow from the information in given statements or premises

Deductive reasoning: The ability to weigh evidence and deciding if generalisations or conclusions based on the warranted

**Logical interpretation:** The ability to distinguish between

The California Critical Thinking Disposition Inventory is a psychological test that is used to measure whether people are disposed to think critically

It measures seven different thinking abilities and it is useful to ask ourselves to what extent they describe the way we think:



- (i).**Truth-seeking** Do you try to understand how things really are? Are you interested in finding out the truth?
- (ii) Open-mindedness How receptive are you to new ideas, even though intuitively they do not agree with you? Do you give them a fair hearing?
- (iii). Analyticity Do you try to understand the reasons behind things? Do you act impuls you evaluate the pros and your decisions?

- (v).Confidence in Reasoning Do you always defer to other people? How confident are you in your own judgment? Do you have reasons for your confidence? Do you have a way to evaluate your own thinking?
- (vi).Inquisitiveness/Curiosity
- (vii). Maturity of Judgment Do you jump to conclusions? Do you try to see things from different perspectives? Do you take other people's experiences into account?



The Halpern Critical Thinking Assessment (HCTA) focuses on five dimensions of critical thinking: verbal reasoning, argument analysis, thinking as hypothesis testing, likelihood and uncertainty, and decision making and problem solving.

The HCTA is unique because it is the only test of critical thinking that uses multiple response formats, which allow test takers to demonstrate their ability to think about everyday topics using both constructed responses and recognition formats.



# 12. Cultural Influences on Critical Thinking

The changing face of international higher education is increasingly becoming Asia-focused, and non-Anglocentric. Can and should critical thinking retain its historic place as a fundamental aspect of a Westernstyle university education?

Even if it does, will this require compromise? What does "critical thinking" mean in the developing regions of the world such as the East and the Middle East? No account of critical thinking in higher education can progress without grappling with some of these key issues



# Critical Thinking Education with Chinese Characteristics

The first articles introducing ideas of critical thinking education to China appeared in 1986 and 1987. However, attempts to apply the ideas to higher education in China did not begin until the mid-1990s.

2003 was a milestone year: the first course with the title "Logic and Critical Thinking" was launc simultaneously in two university

An exceptional aspect of this book was its interactive and practical style of teaching and testing. The authors encourage students to engage in active, reasonable, open-minded, and practical thinking exercises.

Under the title "inquiry-based critical pedagogy," the following active and critical learning and teaching techniques were practice questioning, just-in-time problem-based learning,



2012: former premier
Jiabao Wen,
affirmed the
importance of critical
thinking education
for China in a series
of public speeches



## Yet, resistance in society

Political factors: governments at all levels have not matched their promises of educational reform to develop students' skills with concrete actions

Ideological factors: Chinese and Asian societies under Confucian influence are often characterized as following "collectivism". This label ronly to the political and so of obedience to authority

## **Dong 2015**

#### 21 Critical Thinking Education with Chinese Characteristics

Yu Dong

#### Introduction

This chapter considers the development of critical thinking education in China. On the one hand, progress in critical thinking education in China has been made since the late 1990s, including textbooks, courses, articles, projects, conferences, etc. On the other hand, the development in reality is sluggish, difficult, and with undesirable "Chinese characteristics." In our analysis, the most important factors underlying the problems are not traditional Chinese collectivism or difficulties in teaching Chinese students. We argue instead that the main resistance comes from the uncritical cognitive dispositions in the Chinese tradition and the materialistic values of modern Chinese society. Based on this understanding, we outline a strategy for achieving progress and steering critical thinking education to a better and faster track.

#### Critical thinking education development in China

According to Meixia L1 (2012), the first articles introducing ideas of critical thinking education to China appeared in 1986 and 1987. However, attempts to apply the ideas to higher education in China did not begin until the mid-1990s, when a need emerged to redesign the largely impractical logic courses to be more useful. With growing appeals in China to reform its higher education to foster thinking skills, a number of logic instructors began to look to the critical thinking movement in the West for Ideas and inspiration. They translated and published critical thinking articles and books useful for educational reform (e.g., Browne and Keeley 1994). In 1997, China established its own national MBA program entrance examination, which contained questions similar to those used to test critical thinking skills in the GRE, GMAT, and LSAT in the United States. With rising demand, logic instructors began to extend the contents of their courses to ordinary language arguments. The

Developing critical thinking education in such a sociocultural restrictive environment is a long and ongoing endeavour.

However Dor Kcollege LONDON
proposes a
of tasks that can

1. Continue to help more people understand the broader concept of critical thinking as other than negative thinking, logical application, technical training, theoretical study, or examination preparation. A proper conceptualization is a precondition for critical thinking education

2. Continue to advocate models of critical thinking course that display helpful content, examples pedagogy, etc. This great critical thinking education right track, ensuring that it will not

3. Train instructors of critical thinking courses and subject-matter courses. Instructors should be urged to learn to be a model of attitudes of reason seeking, open-mindedness, self-regulation, and so on, and abandon traditional ideas and habits, like that of being a preacher transmitting infallible knowledge. It is also important to equip the teachers with an awareness of, and ability to use, effective teaching methods as an integral part of the curriculum.

Make use of university Engl

took oritical thinking If the Fragich

5. Encourage university administrations to develop critical thinking education with more resources for teaching, in order to reform the system to introduce teaching assistants, to reward instructors in various ways for their educational work, and to build a risk-taking atmosphere for experiments in Reform.

6. Establish a national research and assessment center for critical thinking information, with real-life Chexamples and tests. Advocatical thinking questions to those

7. Promote critical thinking through nongovernmental organizations and networks for communication and cooperation. Further, expand critical thinking education to secondary schools and business sectors, and build partnerships with them to reinforce the efforts.

8. Last but not least, continue to persuade governments to create policiprovide resources to incorpo thinking into the education system at all

## Take home message

Yes, Critical thinking is a fundamental aspect of a Western-style university education but its principles can be applied, adjusted, and as Dong 2015 has shown, even shaped and improved by contact with other cultures.



## Спасибо за ваше время!



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